

What is claimed is:

*Substantive*  
1. A method for identifying a polypeptide,  
comprising:

(a) determining two or more characteristics  
5 associated with said polypeptide, or a fragment thereof, one  
of said characteristics being mass of a fragment of said  
polypeptide, said fragment mass being determined by mass  
spectrometry;

(b) comparing said characteristics associated  
10 with said polypeptide to an annotated polypeptide index; and

(c) identifying one or more polypeptides in said  
annotated polypeptide index having said characteristics.

2. The method of claim 1, further comprising:

*Substantive*  
15 (d) determining one or more additional  
characteristics associated with said polypeptide;

(e) comparing said characteristics determined in  
step (a) and step (d) to said annotated polypeptide index;  
and

(f) optionally repeating steps (d) and (e) one or  
20 more times, wherein a set of characteristics is determined  
that identifies a single polypeptide in said annotated  
polypeptide index.

3. The method of claim 1, further comprising quantitating the amount of said identified polypeptide in a sample containing said polypeptide.

4. The method of claim 1, wherein said fragment mass is determined at an accuracy in part per million of 1 ppm or greater ppm.

5. The method of claim 1, wherein said fragment mass is determined at an accuracy in ppm of 2.5 ppm or greater ppm.

6. The method of claim 1, wherein said fragment mass is determined at an accuracy in ppm of 5 ppm or greater ppm.

7. The method of claim 1, wherein said fragment mass is determined at an accuracy in ppm of 10 ppm or greater ppm.

8. The method of claim 1, wherein said fragment mass is determined at an accuracy in ppm of 100 ppm or greater ppm.

9. The method of claim 1, wherein three or more characteristics of said polypeptide are determined.

10. The method of claim 1, wherein four or more characteristics of said polypeptide are determined.

11. The method of claim 1, wherein five or more characteristics of said polypeptide are determined.

Sub A1  
12. The method of claim 1, wherein said characteristics are selected from the group consisting of polypeptide mass, amino acid composition, pI, and order of elution on a chromatographic medium.

Sub A2  
5 13. A method for identifying a polypeptide, comprising:

(a) determining two or more characteristics associated with said polypeptide, or a fragment thereof, one of said characteristics being mass of a fragment of said polypeptide, said fragment mass being determined by mass spectrometry;

(b) comparing said characteristics associated with said polypeptide to an annotated polypeptide index;

15 (c) identifying one or more polypeptides in said annotated polypeptide index having said characteristics; and

(d) quantitating the amount of said identified polypeptide in a sample containing said polypeptide.

Sub A1  
20 14. The method of claim 13, further comprising  
(e) determining one or more additional characteristics associated with said polypeptide; and

(f) comparing said characteristics determined in step (a) and step (e) to said annotated polypeptide index; and

(g) optionally repeating steps (e) and (f) one or more times, wherein a set of characteristics is determined that identifies a single polypeptide in said annotated polypeptide index.

5           15. The method of claim 13, wherein said fragment mass is determined at an accuracy in ppm of 1 ppm or greater ppm.

10           16. The method of claim 13, wherein said fragment mass is determined at an accuracy in ppm of 2.5 ppm or greater ppm.

15           17. The method of claim 13, wherein said fragment mass is determined at an accuracy in ppm of 5 ppm or greater ppm.

20           18. The method of claim 13, wherein said fragment mass is determined at an accuracy in ppm of 10 ppm or greater ppm.

            19. The method of claim 13, wherein said fragment mass is determined at an accuracy in ppm of 100 ppm or greater ppm.

20           20. The method of claim 13, wherein three or more characteristics of said polypeptide are determined.

            21. The method of claim 13, wherein four or more characteristics of said polypeptide are determined.

22. The method of claim 13, wherein five or more characteristics of said polypeptide are determined.

23. The method of claim 13, wherein said characteristics are selected from the group consisting of polypeptide mass, amino acid composition, pI, and order of elution on a chromatographic medium.

24. A method for generating a polypeptide identification index, comprising:

(a) determining a set of two or more  
10 characteristics associated with a first polypeptide, or a fragment thereof, one of said characteristics being the mass of a fragment of said polypeptide, said fragment mass being determined by mass spectrometry;

(b) repeating step (a) for a second polypeptide;

(c) optionally determining one or more additional  
15 characteristics associated with said first and second polypeptides, wherein said determined characteristics are sufficient to distinguish said first and second polypeptides, thereby generating a polypeptide  
20 identification index for said first and second polypeptides.

25. The method of claim 24, further comprising repeating steps (a) through (c) one or more times for a different polypeptide, wherein said determined  
characteristics are sufficient to distinguish each of said  
25 polypeptides, thereby generating a polypeptide identification index for each of said polypeptides.

26. The method of claim 24, wherein said fragment mass is determined at an accuracy in ppm of 1 ppm or greater ppm.

27. The method of claim 24, wherein said fragment mass is determined at an accuracy in ppm of 2.5 ppm or greater ppm.

28. The method of claim 24, wherein said fragment mass is determined at an accuracy in ppm of 5 ppm or greater ppm.

10 29. The method of claim 24, wherein said fragment mass is determined at an accuracy in ppm of 10 ppm or greater ppm.

30. The method of claim 24, wherein said fragment mass is determined at an accuracy in ppm of 100 ppm or  
15 greater ppm.

31. The method of claim 24, wherein said characteristics are selected from the group consisting of polypeptide mass, amino acid composition, pI, and order of elution on a chromatographic medium.

32. A method of identifying a polypeptide,  
comprising:

(a) determining a set of characteristics  
associated with said polypeptide, or a fragment thereof, one  
5 of said characteristics being the mass of a fragment of said  
polypeptide, said fragment mass being determined by mass  
spectrometry;

(b) comparing said determined characteristics to  
a polypeptide identification index generated by the method  
10 of claim 24; and

(c) identifying one or more polypeptides of said  
polypeptide identification index having said set of  
characteristics.

33. The method of claim 32, further comprising:

15 (d) determining one or more additional  
characteristics associated with said polypeptide;

(e) comparing said characteristics determined in  
step (a) and step (d) to said polypeptide identification  
index; and

20 (f) optionally repeating steps (d) and (e) one or  
more times, wherein a set of characteristics is determined  
that identifies a single polypeptide in said polypeptide  
identification index.

34. The method of claim 32, further comprising quantitating the amount of said ~~identified~~ polypeptide in a sample containing said polypeptide.

35. The method of claim 32, wherein said fragment  
5 mass is determined at an accuracy in ppm of 1 ppm or greater ppm.

36. The method of claim 32, wherein said fragment mass is determined at an accuracy in ppm of 2.5 ppm or greater ppm.

10 37. The method of claim 32, wherein said fragment mass is determined at an accuracy in ppm of 5 ppm or greater ppm.

38. The method of claim 32, wherein said fragment mass is determined at an accuracy in ppm of 10 ppm or  
15 greater ppm.

39. The method of claim 32, wherein said fragment mass is determined at an accuracy in ppm of 100 ppm or greater ppm.

40. The method of claim 32, wherein three or more  
20 characteristics of said polypeptide are determined.

41. The method of claim 32, wherein four or more characteristics of said polypeptide are determined.

42. The method of claim 32, wherein five or more characteristics of said polypeptide are determined.



43. The method of claim 32, wherein said characteristics are selected from ~~the~~ group consisting of polypeptide mass, amino acid composition, pI, and order of elution on a chromatographic medium.

add  
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